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ABSTRACT

This paper develops a rationale for individualization of instruction and after a brief discussion of two alternative approaches--diagnostic-prescriptive teaching and modularized instruction--promotes learning centers as a practical approach to such individualization. Learning centers are defined as compact, highly-structured sets of didactic materials which are organized to communicate specific information to a learner and which specify precisely what is to be learned, provide alternative multimedia approaches to learning, include evaluation, and encourage student initiative and self-discipline while allowing significant learner freedom. The TOASTE procedure, a mnemonic designed to assist curriculum and learning center developers, is specifically recommended. Details are provided concerning each of the procedure's six components: topic, objective, activities, strategies, time, and evaluation. Additional elements of successful learning centers are discussed, including an introduction to the center with instructions for its use, completeness in terms of the unbroken flow to minimize learner confusion, scheduling devices, task cards, record-keeping procedures, TOASTE formula, mobility, and sturdy construction.
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LEARNING CENTERS: A T.O.A.S.T.E.
TO GOOD TEACHING

a paper presented
by

Steven K. Million, Ph.D.

at

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INTRODUCTION

I wish to thank the Georgia Association for Instructional Technology for inviting me to discuss my views concerning the individualization of instruction. I will attempt to develop a rationale for individualization, discuss alternative approaches to such individualizing, and specify what I believe to be the most appropriate procedure for developing learning centers as an example of well conceived individualizing.

RATIONALE

Formulation of general rules governing human physical and intellectual growth is difficult - if not impossible with our current paltry understanding of the processes of learning. We can, of course, measure numerous educational inputs such as teachers, school buildings, textbooks, and desks. It is even possible to measure some aspects of educational outcomes including student ability to manipulate numbers, comprehend social and scientific theory, organize words into intelligible ideas, etc. However, to this time we have little understanding of the processes of learning. That is, what a student does with the inputs we can identify before they become the outcomes we believe we have detected through measurement. Absence of understanding in this area is the single greatest handicap in the field of pedagogy. Acknowledging this shortfall in our understanding of learning processes, it is nonetheless possible

to press forward in the general field of epistemological inquiry toward a workable and practical instructional program.

Such a program, I believe, must be predicated on several critical assumptions. First, humans have a natural inclination for learning and prefer constructive to nonconstructive activities. Secondly, persons enculturated in social groups like our own strive for success. This appears especially true in education and business. Students demonstrate remarkable commitment to academic success, even against the odds sometime presented by formal, traditional teaching -- learning patterns. Third, learners of all ages and levels of intellect process information at rates and in ways different from other learners of similar backgrounds. Fourth, and perhaps most importantly, everything known to an individual beyond basic reflexes present at birth are the product of experiences. These experiences are constantly presenting themselves, constantly altering perceptions of reality, knowledge, value, significant others, and self. Most such experiences occur by chance and are unplanned. Yet their impact on a learner is no less profound than the most carefully organized lesson. As learner perceptions are shaped by unique sets of experience, learners tend to compound their uniqueness by differentially interpreting data. Clearly what is needed is an instructional procedure that will provide learners high quality inputs while recognizing and accomodating their individual learner uniqueness. Further, communication of subject matter is important, but in industry as in schooling the development of learner initiative, creativity, and genuine interest in learning are actually more important than the communication of factual material. The learner, not subject matter, must be the central

focus of education. I believe learning centers when properly designed and used, represent an important step in the directions I have outlined.

OTHER APPROACHES TO INDIVIDUALIZING

It is my charge today to discuss learning centers. Because I have on many occasions witnessed the success of my own learning centers and those designed by my students, I can heartily recommend them. However, I would be remiss not to mention two other approaches to individualizing I believe are useful and practical. The first of these is diagnostic -- prescriptive teaching. This highly structured procedure specifies learner experiences, identifies specific learner needs and provides instruction to remediate those needs. Use of diagnostic -- prescriptive techniques presumes learner differences and provides for them. Likewise, a second instructional procedure known as modularized instruction has proved a useful tool in individualized instruction. In this procedure learners know exactly what is expected of them, they are provided alternative means of accomplishing those expectations, they are allowed to establish self-direction and pacing, and they are provided evaluation activities that tell them when they have accomplished the specified expectations. Learning centers, when properly designed and used, do all of these things and more.

LEARNING CENTERS

A learning center is a compact, highly structured set of didactic materials organized to communicate specific information to a learner. It specifies precisely what the learner is to learn,

provides alternative multi-media approaches to learning what has been specified and provides for specific evaluation of the quality of that learning. In addition a well-constructed learning center encourages student initiative and self-discipline while allowing for significant learner freedom.

To construct a quality learning center, I recommend the "TOASTE to Good Teaching" procedure. TOASTE is a mnemonic designed to assist developers of learning centers and other curricular programs. Its letters signify the six considerations I believe are most important to curriculum development. These considerations include:

TOPIC. The developer of curriculum must begin with a topic or general area of inquiry appropriate to his student population and subject area. Not all topics are equally well suited to individualizing. Those topics best suited to individualizing include reading, mathematics, language arts, sciences, and specific skills such as electronics, computer programming, etc.

OBJECTIVES. Curriculum developers must recognize their obligation as subject specialists to designate what elements of the universe of information in their field are actually needed by learners. Once this information is isolated, the curriculum developer must carefully delimit that information in behavioral terms specifying the intended audiences, terminal behavior, conditions of behavior, and acceptable levels of performance. Care must also be given to writing such objectives at all levels of "The Cognitive Domain of Objectives" as suggested by Bloom, 1956. To do less is to teach to only part of a learners' mental capability.

ACTIVITIES. Activities including assignments, must be carefully

chosen to correlate as perfectly as possible with objectives. Activities and assignments not related directly to objectives should be avoided. Such activities have traditionally required considerable learner effort and time with little apparent purpose. Such activities may encourage learners to view all activities and assignments as meaningless. The obvious implications of such a view are distressing.

STRATEGIES. Should be considered in determining the most effective means of organizing and ordering to maximize chances for learner success. Teaching strategies should be geared to the learner's preferred style of instruction and the nature of the material being taught.

TIME. Estimates of the time required for completing all aspects of the learning program are essential to quality instruction. Just as estimates of timing should be reflected in a daily lesson plan as an aide to classroom instruction, consideration should be given to the amount of time required of each student using a learning center, the amount of time required of the instructor in verifying student work, recording such information and returning work to students.

Finally, the developer of learning centers must be prepared to employ evaluation techniques with minimal threats to internal validity. If well written objectives are used, and from these are randomly selected all test items, such a condition will likely be met. When careful attention is given to the time required for completing the measurement and to the conditions of testing, external threats to validity also should be minimized.

The hallmarks of well-constructed learning centers are completeness and flow. A learning center which is not complete

in terms of the "TOASTE" formula specified above, or which does not permit a learner to flow through all activities without confusion may inhibit learner progress. Because learning centers are a means of avoiding learner confusion by permitting learners to pace themselves and to engage in several learning activities aimed at satisfying each stated objective, a steady flow of activity is essential. Learning centers, when properly designed, accomplish the teaching necessary to satisfy the specified objectives. This fact allows teachers to perform other functions such as individual student counselling, evaluation of paperwork generated by the learning center, or to work with learners not presently using the center. When learning centers are not complete, or when this flow is broken, much of what justifies a learning center is lost.

Developers of learning centers can exercise generous latitude in topic selection, choice of theme, artistic design, selection of media, etc. However, to enhance the probability of designing a successful learning center, I propose several essential elements.

The first important element in a center is the introduction. The introduction to a learning center should accomplish two purposes. It should incorporate a complete and concise statement of the center's intent. Because this is the first piece of information most students will need, it should be located in the most logical reading position - at the top of the left-most element of the learning center backboard. Immediately under this introductory element should appear explicit instructions for using the learning center. Centers not carefully organized can be incredibly confusing. The instructions should be sequential. They should specify how the learner is to use the center and in keeping

with the need for "flow", should indicate what next to do when he has completed reading the instructions.

A second critical element of the learning center is the presentation of instructional objectives. These objectives, written as suggested in the "TOASTE to Good Teaching" formula, should be centrally located in the learning center. They should also be restated within the activities designed to accomplish them. Students should be frequently reminded of the object of their labor in the belief that knowing what they are working toward will enhance the probability that they will continue working.

A well-constructed learning center should emphasize multi-media approaches to instruction. That is, a well-designed center will appeal to a wide range of senses as the learner attempts to accomplish the designated objectives. Mechanical devices such as a record player, cassette recorder, slide or movie projector, VCR, computer, or nearly any machine can be used in a learning center. Further, non-mechanical, multi-media material can also be included. Such things as drawings, photographs, maps, globes, playing cards, dice, books, etc. can be effectively incorporated into learning centers. However, the developer of learning centers should remember that these devices, both mechanical and non-mechanical, can be employed only when they are part of activities directly related to the accomplishment of specific objectives. They should not be included merely as entertainment.

Learning Centers should also contain a device for scheduling learner participation. Many centers can accomodate only one or two learners at a time. It is necessary under such circumstances

to schedule learners into the center at designated times. This helps avoid confusion among learners and assists teacher efforts at planning.

As mentioned earlier, it is important that learners be able to flow through the learning center activities without undue confusion. To accomplish this end, I recommend use of a series of task cards. These cards are sequentially ordered allowing a learner to undertake a specific task and, when it is complete, move to the next step in the learning center sequence. Task cards may specify everything a learner needs to accomplish an objective, or it may refer the learner to a separate activity. If such rerouting is called for, the flow must move from the task card to the activity and then from the activity back to the series of task cards.

Two other elements are needed. To insure proper credit for learner accomplishment a record-keeping procedure must be developed and used. The exact nature of the procedure is not important, but to the extent such is possible it should positively reinforce learner satisfaction of the instructional objectives. In addition, provision should be made for storing and transmitting student work. For student work not yet complete, an incomplete work file or similar device should be present in the center. For completed work which should be reviewed by the teacher a separate receptacle should be included.

Finally, learning centers should be mobile and sturdy. I recommend that all centers be designed for easy storage requiring minimum storage space. In addition, I recommend lamination or other processes for protecting learning center materials.

In this presentation I have attempted to develop a rationale

for use of learning centers, I have discussed two other approaches to individualized instruction, and I have discussed my view of the proper procedures for designing learning centers. John Dewey admonished teachers to do what the known demands. I believe the known demands attention to the development of individualized learning devices. Learning Centers, when properly designed, provide a practical means for individualization of instruction.